

Hotel Building HVAC & Lighting Energy Management



Wyndham Hotel
Hotel Retrofit



HVAC and Lighting Controls Reduce Energy Consumption Up To 33%

Wyndham Hotel independent test results show high potential for wireless energy management systems

Wyndham Hotels recently tested ILLUMRA products in search of a way to reduce hotel room energy costs. Enabled by EnOcean technology, the ILLUMRA wireless and batteryless energy control system became the ultimate solution for Wyndham.

To illustrate the savings potential of the control system, a test was conducted at a Wyndham Hotel along the Eastern Seaboard. HVAC and lighting energy savings were created by utilizing sensor and control devices that respond to hotel room occupancy statuses. Testing concluded that hotel rooms controlled by EnOcean based Energy Control System consumed 33% less energy than rooms without the energy harvesting controls.

The hotel room energy system determines if a hotel room is vacant or occupied according to the status of the system's Keycard Access Switch. When a guest enters a hotel room and inserts their key card into its dock, a radio signal is sent that alerts the system that the room is occupied. When the guest leaves the room unoccupied, the removed key card automatically shuts off controlled lights and/or electronics and sets the inroom HVAC system back to its unoccupied / energy-conservation mode. In the Wyndham Hotel study, four hotel rooms were monitored. Two were retrofitted with the EnOcean based controls and the other two were used as independent control rooms with the original system still in place. HVAC and lighting energy consumption was analyzed over a period of thirty days.

SMART HOTEL ROOM ENERGY MANAGEMENT

Occupancy-based Automation: When guests remove their keycard from its dock and leave the room, the air-conditioning unit is automatically turned off or adjusted accordingly to preset preferences.

Wireless and Batteryless Technologies: Keycard switches were installed featuring EnOcean's wireless and batteryless technologies allowing for simple installation.

CHALLENGES FACED, PROBLEMS SOLVED

With environmental and economical paybacks already in sight, the team installed the energy control system and was able to minimize hotel closures due to the fact that wiring obstacles were a non-issue.



Advantek Lighting Solutions

Unit 4 – 7459 Edgar Industrial Bend Red Deer, Alberta, T4P 3Z5
Ph: 403.346.2933 Email: info@advanteklighting.com



Installation challenges and their counter solutions:

Hotel Divider Walls: The retro-fit installation posed hard-to-wire locations such as room divider walls and typical ceiling obstacles. The controls are batteryless and wireless – no line power was needed and the solution rescued installers from having to spend time digging into walls and ceilings.

Zero Maintenance: The newly installed controls operate maintenance-free. The controls operate without batteries and will require zero maintenance over the long life of the controls.



ENOCEAN-ENABLED WIRELESS CONTROLS

Self-powered Hotel Keycard Switch

The key card activated switch is ideal for use as a hotel room master switch. The switch is wireless and self powered controlling HVAC and Lighting statuses.

Thermostat

24 volt AC traditional digital thermostat paired with EnOcean technology to communicate with key-card switches.

Relay Receiver

The Relay Receiver allows electrical loads to be controlled by self-powered wireless switches and sensors.

PAYBACK DATA

The overall savings incurred by the implementation of the Energy Control System is illustrated in the chart below. When considering all the criteria from the demonstration and the energy profile it is estimated the reduction in the total annual guest room energy cost will be reduced by 33%. All efforts were taken to achieve the most accurate results possible. However, due to the complexity of the type of analysis, the actual percentage of savings may fluctuate. Based on this demonstration if all of the 293 rooms were converted to the Energy Control System there would be a total savings of 480,991 kWh totaling \$73,486 annually. The Energy Control System will help hotel's comply with energy standards such as ASHRAE/IESNA standard 90.1.

Annual Summary

	Control Room	Green Room	Annual Savings
Lighting Cost/Savings	\$190	\$127	\$63
KWH AC/Heat	\$570	\$382	\$188
Total Annual Cost/Savings	\$760	\$509	\$251
Total Estimated Savings			33.08%
Savings @ 293 Rooms			\$73,486